

REMARKS

In the latest Office Action, the Examiner has maintained the rejection of claims 1-6 and 8 under 35 U.S.C. 103(a) as being unpatentable over the combination of Blalock (5,320,981) and Wu (5,940,731). While the Examiner maintains that it would have been obvious to combine the teachings of the references, she has provided no motivation or reasoning as to how one skilled in the art would modify the references to arrive at the claimed semiconductor device precursor.

As previously pointed out, Blalock does not teach or suggest the use of a hard mask material formed on a dielectric layer and having facets, nor does he teach forming shoulders on a dielectric material from a mask material as claimed. While the Examiner asserts that "Blalock was not relied on for this purpose," applicant submits that one must take into account Blalock's lack of teaching of a hard mask material when determining whether motivation exists to modify Blalock as the Examiner has proposed.

With regard to Wu, the Examiner maintains that Wu teaches a hard mask layer (polysilicon layer 28) on a dielectric material which includes a pair of shoulders, where the hard mask material includes a pair of facets. However, Wu does not teach a hard mask layer which is formed by a **single** deposition of hard mask material as taught in the present invention. See the specification at pages 8-10 and new claim 9. Rather, Wu teaches sidewall spacers (34) which are formed from the deposition of a **second** polysilicon layer 28, and facets which are formed by etching a **third** polysilicon layer 52. While the Examiner asserts that "Wu forms shoulders 58 by re-depositing a polysilicon layer 52 (hard mask), which was previously removed as layer 28," Wu does not teach the *re*-deposition of the same mask material formed from an earlier single deposition as in the present invention, but rather the deposition of a **separate** layer of the same type of material. See col. 5, line 44 to col. 6, line 25. Thus, with respect to claims 1-6 and 8, Wu would not teach a device including a pair of shoulders having "said hard mask material thereon", but rather a material deposited from a second or third deposition.

Nor is there any motivation to combine the teachings of Blalock and Wu. As previously pointed out, Blalock teaches a method of forming a via by re-depositing **dielectric** material during etching to form sidewall spacers, while Wu teaches separate depositions of **conductive** polysilicon material to form sidewalls. There is no suggestion or motivation to replace Blalock's dielectric sidewall spacers with the polysilicon material of Wu. Even if combined, the references would not suggest the claimed semiconductor device precursor which includes a hard mask layer formed by a single deposition of a hard mask material.

Claim 7 has been rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Blalock and Wu and further in view of Linn et al. (5,547,896). The Examiner acknowledges that the combined teachings of Blalock and Wu do not teach or suggest that the hard mask material comprises a titanium-tungsten alloy as claimed. The Examiner refers to col. 3, line 9 of Linn et al., which teaches the use of a titanium-tungsten alloy as a hard mask layer. Again, the Examiner has provided no reasoning or motivation as to how or why one skilled in the art would combine the teachings of the references. Blalock does not use a hard mask material, and Wu's polysilicon has not been shown to be interchangeable with the alloy of Linn. None of the cited references teach the claimed semiconductor precursor having a layer of hard mask material formed from a single deposition of mask material, which mask material includes a pair of facets, nor do they teach a layer of dielectric material having a pair of shoulders with said hard mask material thereon as claimed. Claim 7 is patentable over the cited references.

For all of the above reasons, applicant submits that claims 1-8 as amended and new claim 9 are patentable over the cited references. Early notification of allowable subject matter is respectfully requested.

Respectfully submitted,

DINSMORE & SHOHL LLP

By Susan M. Luna  
Susan M. Luna  
Registration No. 38,769

One Dayton Centre  
One South Main Street, Suite 500  
Dayton, Ohio 45402-2023  
Telephone: (937) 223-2050  
Facsimile: (937) 223-0724